MARKED-UP VERSION

IN THE CLAIMS:

Please amend claims as follows:

1. (previously presented) An X-ray absorbing material comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, wherein said filler material is a poly-dispersed mixture that has been segregated by intermixing and that contains metallic particles having a size between 10^{-9} and 10^{-3} m fixed in a textile base that serves as a matrix; and wherein the particles are bonded to the surface of and embedded in said textile base, and where the density of the X-ray absorbing material as a whole, given that the X-ray absorbing properties are equal to those of the material used for the particles of the X-ray absorbing filler, is defined by the relation:

$\rho m = (0.01 - 0.20)\rho p$,

where ρm is the density of the X-ray absorbing material as a whole, and

ρp is the density of the material used for the particles of the X-ray absorbing filler.

2. (previously presented) An X-ray absorbing material comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture that has been segregated by intermixing and that contains metallic particles having a size between 10^{-9} and 10^{-3} m, wherein said particles are surrounded by the volume of a matrix that is made of at least one compound that solidifies under atmospheric pressure, or made of a composition derived from a base of the same compound, and the total mass of the segregated, poly-dispersed mixture consisting of particles of the X-ray absorbing filler is defined by the relation:

$M = (0.05 - 0.5)\ m$,

where M is the total mass of the segregated poly-dispersed mixture consisting of the X-ray absorbing filler particles, and

m is the equivalent mass of the X-ray absorbing filler material equal in protective properties to mass M.

3. (previously presented) An X-ray absorbing material comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture containing metallic particles having a size between 10^{-9} and 10^{-3} m, wherein said particles are bonded to an intermediate substrate surrounded by the volume of the matrix formed of at least one compound that solidifies under pressure.

4. (previously presented) An X-ray absorbing material, as defined in claim 3, wherein:

a textile base is used as an intermediate substrate.

5. (currently amended) An X-ray absorbing material, ~~as defined in claim 3, wherein~~ comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture containing metallic particles having a size between 10^{-9} and 10^{-3} m, wherein said particles are bonded to an intermediate substrate surrounded by the volume of the matrix formed of at least one compound that solidifies under pressure; and

a mineral fiber is used as [an] said intermediate substrate.

6. (previously presented) An X-ray absorbing material comprising:

a matrix with a fixed X-ray absorbing metal-containing filler in the form of dispersed particles, where said filler material is a poly-dispersed mixture containing metallic particles having a size between 10^{-9} and 10^{-3} m, wherein said particles are bonded to an intermediate substrate surrounded by the volume of the matrix formed of a composition derived from at least one compound that solidifies under pressure.

REMARKS

Claims 1-6 are in the application.

Claims 1-2 were indicated as allowed on PTOL-326 but were later noted as rejected. In order to fulfill their obligation to respond to each and every rejection and objection raised, and to minimize possible confusion, Applicants state they will respond to the Examiner's comments as if the claims had been rejected.

Claims 3, 4, and 6 stand initially rejected.

Claim 5 stands objected to but allowable as dependent upon a rejected base claim.

Claim 5 has been amended as shown and is consequently proposed as allowable.

Favorable reconsideration is respectfully requested in view of the enclosed amendments and the following representations.

No new matter has been added. Support for the amendments is found in the original claims, specification, file history, and drawings.

1. Rejections under 35 U.S.C. §102/103 regarding claims 1, 2, 3, 4, and 6 in view of Servant alone.

Claims 1 and 2 stand initially rejected as either fully anticipated under §102(b) by Servant et al., or in the alternative, as being rendered solely obvious under §103(a) in view of Servant alone. Claims 3, 4, and 6 also stand initially rejected as fully anticipated under §102(b) solely by Servant.

Applicants will address the requisite legal standards (1) anticipation, (2) obviousness, (3) inherency, and (4) reasonable experimentation in this section to avoid later repetition.

Applicants note that MPEP §706.02(a) requires that Examiner rejections should be strictly confined to the "best available art." Here, the Servant reference has been cited as the sole best available art in all cases. As a consequence, in any subsequent action should a new or additional reference (or even a previously cited reference) be employed, Applicants request a full

opportunity to respond before a final condition since, based on the inherent assertion of sole "best available art," no other reference presently exists alone or in combination with Servant of sufficient strength to cite. As a consequence, no future additional reference or combination can cause an final condition as no meeting of the minds would be sufficiently established to advance to that stage.

In initiating a initial rejection for anticipation for §102(b), the Examiner necessarily takes the position that the claims in question contain each and every element, limitation, condition, and requirement of the claims. The rejection is respectfully traversed and reconsideration is requested. In order to avoid rejection for anticipation, it is only necessary to show that a claim contains at least one element not disclosed in a single prior art reference.

In initiating an initial rejection for *prima facie* obviousness under §103(a), the Examiner necessarily takes the position that the sole prior art reference must teach or suggest all the claim limitations, elements, conditions, and requirements. MPEP § 2143. This rejection is respectfully traversed and reconsideration is requested. Applicants suggest that the Examiner's assertions of inherency (for the reasons noted below) are insufficient to establish an initial *prima facie* obviousness rejection. In order to avoid the establishment of *prima facie* obviousness it is only necessary to show that the reference lacks at least one claim limitation, element, condition, or requirement, or alternatively, that the steep burden for inherency has not been initially established.

Before going further, it seems clear that the present invention has not been understood, and that a brief overview is recommended. Namely, in contrast to Servant, the instant invention's teaching is that to increase X-ray absorbing capacity the mass is reduced while particle size is preferably selected (a clear contradiction to Servant who teaches solely increased mass=increased X-ray resistance). As will be addressed, the Servant size teaching requires particles no smaller than 60 μm (60×10^{-6}) while the instant invention provides for particles up to 400 times smaller (to 1×10^{-9}).

The both new and non-obvious effect of Applicant's invention is based on the capacity of particles having sizes of between 10^{-9} and 10^{-3} m, to self-organized into energetically-interconnected ensembles that reduce the Roentgen radiation in an abnormally high degree by not blocking via direct a "direct impact" (although this occurs) but by inter-spacing themselves and interfering with the passage of X-rays. Such synergistic effect appears as the result of segregation of the said poly-dispersed particles by means of their mixing with each other and not by a combination of preferable mass-selection and plastic moment to retain flexibility as required by Servant.. Despite the many examples in Servant, the inherent disclosure is rather limited.

In sum, the instant invention surprisingly and substantially decreases the mass and thickness of an X-ray protective material while simultaneously achieving high X-ray protection via interference and absorption of the energy. Servant requires the replacement of lead with various other heavy dense metals (e.g., Uranium, Strontium, Barium, etc. (all known X-ray blockers) in an elastomeric composition with no less than 70wt% of the compositing being metal (col. 10, lines 55-58) (a clear contrast to Applicant's teaching).

Servant specifically teaches that the resultant product act solely a "supplement" to a pre-existing "radiation protection apparel." (Col 3, line 36-39). Thus, Servant in all fairness is incapable of "being substantially identical to," achieving the goals, or meeting the teachings of the instant invention absent seductive, but impermissible hindsight and undue experimentation without the leadership provided by the instant disclosure.

While Applicants addressed and discussed arguments of "Inherency" in their previous paper of April 5, 2004, Applicants respectfully propose that a full review is in order. Applicants note the following "inherency" presumptions (assumptions) raised by the Examiner:

(A) Section 4, second para.: "the disclosed particle size reads on a poly-dispersion since the term average as disclosed by Servant et al precludes the use of monodispersion" (in other words Savant's use of the term "average" inherently includes Applicants phrase "poly-dispersion"

(B) Section 4 second para.: "It is reasonable to presume **[e.g, assume]** that said limitations are inherent in the invention." (emphasis added) based on:

(i) "similar materials" - but discussed in stead regarding similar size, and

(ii) similar production steps - avoiding the requirement of selecting different particle sizes.

In sum, the Examiner argues that the disclosure in Servant supports an inherency argument in an attempt to shift the burden of proof (see page 3, 3 lines from bottom). Unfortunately, this is not the case cannot be successful, while *In re Fitzgerald* (1980) (adopting *In re Best*) allows a limited type of inherency under special circumstances (not met here), and *In re Best* (1977) allows a combination of §102 and §103 jointly or alternatively, the burden on the Examiner is clearly extensive to prove **both** (A) that the resultant product is ***substantially identical***, (MPEP 2112, V) **and** (B) that the Evidence exists to show that the missing matter is necessarily present in the Servant reference. *In re Oelrich*, 666 F.2d 578 (CCPA 1981) (see clearly requirement heading §2112 IV). As a consequence there are two (2) requirements to establishing an initial inherency argument, and for the reasons noted below Applicants suggest that this burden has not been met, and cannot be met based upon the single Servant et al. disclosure applied.

As a side note, it is critical to understand the subjugation (forced submission) of the USPTO/MPEP to the will and rulings of the CAFC, and it's precursor the CCPA. In other words, the 1980 and 1977 references cited by the Examiner were long ago overruled by the below 1990, 1993 and 1999 decisions creating a different and much steeper mandate than the one asserted.

The Court of Appeals for the Federal Circuit, (whose rulings wholly control the USPTO) clearly understands this steep burden by requiring the following rules in recent decisions:

"To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and

that it would be so recognized by persons of ordinary skill in the art. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q2d 1949, 1050-51 (Fed. Cir. 1999) (see MPEP §2112 IV). (emphasis added)

Again the CAFC has clearly stated, "[t]he mere fact that a certain result or characteristic may occur is *insufficient* to establish inherency of the result and shift the burden of proof. See *In re Rijckaert* 9 F.3d 1531, 1534, 38 USPQ2d 1955 (1957 (Fed. Cir. 1993) (reversing rejection) (MPEP §2112).

Most importantly, "the Examiner must provide a basis in fact/and or technical reasoning to support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied art. *Ex parte Eevy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990), MPEP §2112. (emphasis added)

Applicants respectfully assert that in view of the proper legal standard - identified above - the Examiner cannot assert a prima facie case of inherency, that the disclosure of Servant is not "substantially identical," cannot "necessarily present" the same thing as claimed, provides at most mere "probabilities or possibilities, " and provides no basis or theory or technical reasoning to reasonably support a rational determination that the allegedly 'inherent characteristic' necessarily flow from the teachings" of Servant (for the reasons below).

Before going further, Applicants respectfully note that when interpreting claim language, specifically the phrases poly-dispersed or polydispersion, and the above discussed formulas, the Applicants may be their own lexicographer as long as the meaning given to the term is not repugnant to the term's well known usage. MPEP § 2173.01, 2111.01, MPEP §21783.05(a) and *In re Prater*, 415 F.2d 1393 and elsewhere. Applicants respectfully suggest

that t seems here that the Examiner may be attempting to interpreting claim language according to a meaning clearly not dictated by the disclosure, as mandated by the rules

Applicants note for the record that there is, of course, no reference at all to the required element of polydispersion or a poly-dispersed mixture in Servant, or even the use of the phrase "distribution" of any kind (or any other distribution-type phrase).

In further example; regarding Section 4, the Examiner asserts that the term "average" as used by Servant "reads on" polydispersion since therm "average" as used by Servant "clearly precludes" the use of a "monodispersion. (See page 3, second para.)

In taking this position the Examiner necessarily takes the step of inferring (e.g., assuming) both (a) that the present invention eliminates uniform size particles and requires only non-uniform sized particles (somehow in a teaching in neither Servant's nor Applicant's), and (b) that the phrase "poly-dispersed" equals non-regular or non-uniform dispersion somehow within the instant meaning claimed

For the following reasons, Applicants respectfully propose this analysis is in clear error of both the reference, the disclosure, and the examination requirements of the Office and cannot be "substantially identical" to the instant invention.

(1st) "mono" does not equal "poly" (neither term exists in the reference)

(2nd) by shear linguistic definition "average" cannot equal "polydispersion" since particles of the same size may be polydispersed.

(3rd) "average" as used in Servant is solely size-based and is contrary to dispersion (e.g., a position, or placement based use within a construct of any kind). As the Examiner has not illuminated a particular use of the phrase "average" for review, Applicants respectfully suggest the following size-based example (as used uniformly throughout the reference) as an illustration.

". . . and in particular have an average of about 200 mesh (screened to greater than 60 microns)." (col. 9, lines23-25)

To wit, the use of the term "average" in Servant is solely size-based hand has no connection to positioning within a matrix.

By applying the term "segregation" by mixing the Applicants recite redistribution of the particles in the contents of the poly-disperse filler up to the appearance of energenetically-interconnected ensembles. See Abstract etc.

An average particle size in Servant therefore has no meaning relative to overall distribution since, quite obviously, the Servant materials (particularly the up to 90wt% particles in any composition (and always >50wt%) may easily fall out of solution, fail to disperse in mixing, or by size segregate by weight in a solution without specific care unsupported in Servant (see col. 10, lines 55-57 specifically, and reference generally). Why? Servant achieves it's goal solely by increasing total Atomic Mass through selection to maximize effect, a clear contradictory teaching to the instant invention elimination any possible "substantially identical" assertion.

Should the Examiner maintains a claim language interpretation not dictated by the disclosure, Applicants respectfully request an offer of proof that the claim language "poly dispersion" or "poly-dispersed" dictated by the specification and claims is repugnant to the well known usage and is solely understood by those skilled in the art as meaning "average."

Additionally, after admitting in the record that "Servant et al fails to teach an article (e.g., required limitation/element) characterized by the Applicants invention"(claim 1) (page 4, first para.), the Examiner also raises the specter of "routine experimentation to determine optimal density"

(whatever optimal density is according to Servant).

Ignoring for the moment that this admission necessarily avoids both the §102 and §103 rejections, the Examiner has necessarily assumes a position that "it would have been a simple matter of routine experimentation." Applicants respectfully disagree and note the following errors.

No reasonable amount of adjustment (or reasonable experimentation) within the required 70wt% minimum of the composition as metal (col 10, ln. 56) and 2.8-6.5 g/cc of total polymer composition - including the metal (col. 11, ln. 30), will reach the required claim limits in claims 1 and 2, particularly in Servant's preferred range o f 80-90wt% and 3-5 g/cc. Servant teaches specifically that the variable adjustment of elements is selected upon the spectrum of wavelengths in a specified spectrum. (Col. 9, lines 35). In other words, that once a graph like Fig. 5 is shown, a mixture meeting a particular wavelength of mass-blocking is selected. The direction of Servant is further limited by it's direction to clothing that is additive to other radiation protection apparel (col 3, lines 37-38). In sum, the experimental teaching of Servant is to vary particle size of no less than 60 microns of a forced multi-sized particle group, into a 70wt% minimum elastomeric composition. This is in clear contradiction to the instant discussion and Applicants respectfully suggest that any attempts to "routinely experiment" in Applicant's direction from Servant would be tortuous indeed.

To locate, based solely on Servant's limited disclosure, the particular requirements of the present claim 1, the Examiner necessarily asserts that the claimed relation simply defined Applicant's article as a whole and that Servant somehow also included this same relationship without further support or citation to the reference (lacking any support). Applicants respectfully suggest that this is a false and non-compliant analysis. To wit, see Section 4, last para. (Page 4), "[r]outine experimentation to determine the "optimal density" of the X-ray absorbing article as well as the total mass of the ..... that offers maximum flexibility and X-ray absorbing characteristics." The Examiner cites to col. 11, lines 31-41 in support.

Applicants respectfully note that is disclosed in the referenced the Servant section cited that the reference requires the "composition" to have a range of 2.8 to 6.5g/cc, and more preferably 3-5 gr/cc. As specifically noted (col 10, lines 55-57) Servant also requires that the composition used to form the layer further require inclusion of 70-93% by weight of metallic particles.

Applicants are confused as to how Servant can both require a composition as light as 2.8g/cc while requiring it to have by weight at least 70% solid metal while still somehow disclosing the instant inventive relationship of extremely low density material concentration (as low as 1%) and by weight at a maximum of 50% - all without undue experimentation and of "substantial identical" nature - in sum in clear contradiction of Servant's requirements.

The difference is at closest 20% by weight - well outside routine experimentation or substantial identical-ness.

According to Servant, the X-ray absorbing effect of the resulting composition is equal to the X-ray absorbing effect of the metallic particles contained therein, and as a consequence, that the metal in the composition functions solely with its ordinary atomic weight X-ray blocking properties inherent in such metals.

Applicants specifically note that claims 1, 2, 3, 4, and 6 mandate that the filler material be

(1) a poly-dispersion;

(2) a poly-dispersion containing metallic particles; and

(3) the particles have the size dictated.

Applicants specifically note that claim 1 additionally requires that the density of the X-ray absorbing material as **a whole** be between 1% and 20% of the density of the metallic particles (see derivation of formula claimed). In sum, there is a huge difference in densities between the resultant material and the individual particles. In contrast Servant (col. 10, lines 55-59) requires that the

composition include at least 70% by weight metallic compounds, an preferable at least 80-90% by weight.

To wit, by applying the term "segregation" by mixing the Applicants recite redistribution of the particles in the contents of the poly-disperse filler up to the appearance of energenetically-interconnected ensembles. An average material size in Servant therefore has no meaning relative to overall distribution since, quite obviously the Servant materials (particularly the up to 90wt% particles (and always >50wt%) would easily fall out of solution

Applicant's respectfully propose that the Examiner's assertions are clearly incorrect for the reasons stated above and that any burden has not been created or shifted to show obviousness much less inherency. It is noted again that the Servant reference fails to disclose or even suggest several of the specific claim limitations,

For the reasons noted above, each of these assumptions has been shown to be incorrect upon complete review of the Servant patent, its teachings, suggestions, and motivations. It is also respectfully suggested that the dual "substantially identical" and supporting evidence requirements of MPEP §2112 have not been met, and that the claims are both novel and non-obvious for that reason alone and for the detailed recitations each contains.

Reconsideration of the claims in light of the above review and discussion is earnestly asserted.

CONCLUSION

Reconsideration and withdrawal of the rejection(s) is respectfully requested.

In view of the foregoing, the application is now believed to be in proper form for allowance and notice to that effect is earnestly solicited. Applicants propose respectfully that they have

responded to each and every rejection and objection raised by the Examiner in this case.

While Applicants have respectfully disagreed with the Examiner's rejection of the claims for the above reasons, Applicant's have elected to amend the claims for clarity only, and solely for the purpose of clarifying the patent application process in a manner consistent with the PTO's Patent Business Goals (PBG), 35 Fed. Reg. 54603 (September 8, 2000). Therefore, it is proposed that this amendment does not narrow the scope of the claims.

No new matter has been added. In the spirit of condensed and streamlined practice, if the Examiner believes that a telephone conference would be of value, he is respectfully requested to call the undersigned counsel at the number listed below for prompt response.

Applicant hereby petitions that any and all extensions of time of the term necessary to render this response timely be granted. COSTS FOR SUCH EXTENSION(S) AND/OR ANY OTHER FEE DUE WITH THIS FEE DUE WITH THIS PAPER THAT ARE NOT FULLY COVERED BY AN ENCLOSED CHECK MAY BE CHARGED TO DEPOSIT ACCOUNT #10-0100.

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AY/as
Attached:
ERMAK.P-001 ERM 11-1-04 amendment.wpd
Attached: none

Respectfully submitted,

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